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Patent
Attorney's Docket No. 013550-069

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	
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Bruce R. SMITH et al.	)	Group Art Unit: 3721
	)	
Application No.: 09/453,498	)	Examiner: Eugene L. Kim
	)	
Filed: December 3, 1999	)	
	)	
For: FOOD SERVING PAPERBOARD CONTAINER PRESSING APPARATUS EMPLOYING CAST-IN ELECTRICAL HEATERS	)	

DECLARATION UNDER 37 C.F.R. § 1.132

Assistant Commissioner for Patents
Washington, D. C. 20231

Sir:

I, Dana Markwell, do hereby declare as follows.

I am employed by Georgia-Pacific Corporation which recently acquired Fort James Corporation, the named assignee in this application. I have been employed by Georgia-Pacific Corporation/Fort James Corporation since the latter part of 1992.

I am currently the project engineer at the Georgia-Pacific Corporation manufacturing facility in Bowling Green, Kentucky, and have held this position since about the middle part of 1997. My responsibilities primarily involve overseeing technical and process improvements, and new installations in the facility.

Products manufactured at the Bowling Green plant include pressed food service paperboard articles such as paper plates, paper trays and the like. These products are manufactured through use of pressing machines having heated upper and lower dies (punch

and die) which together form a die set. Each pressing machine includes five die sets so that each stroke of the pressing machine results in the production of five pressed food service paperboard articles.

Up until the last several years, we used electrically resistive ring heaters to heat the die sets in these pressing machines. Each die set was heated by three ring heaters; two ring heaters in one of the dies and one ring heater in the other die. With these ring heaters, we experienced an incredibly high incidence of ring heater failure during normal operation of the pressing machines.

In 1997 for example, we operated four pressing machines in our Bowling Green facility to produce nine-inch paper plates. Each of the five die sets in each of the four pressing machines was heated by three ring heaters. Thus, a total of 60 ring heaters were used in the five pressing machines. Between January 1, 1997 and December 31, 1997, these four pressing machines experienced a total of 345 ring heater failures requiring replacement of the ring heater. Each time one of the ring heaters would fail, the entire pressing machine would be stopped and the failed ring heater replaced. Thus, each ring heater failure resulted in lost production time not only with respect to the die set having the failed ring heater, but also with respect to the other four die sets of the pressing machine. Consequently, in addition to the cost of the new ring heater, the replacement of failed ring heaters resulted in significant lost production.

It is believed that the significantly high failure rate of these ring heaters is attributable to several factors. The manufacture of pressed food service paperboard articles

usually requires relatively high temperatures which typically means that the ring heaters must possess a very high wattage. In operation, the ring heaters are oftentimes run at a wattage on the order of 1500 watts - 5000 watts. This significantly exceeds the power wattage ratings of the ring heaters which is typically on the order of 300 watts - 1200 watts. We have found that operating the ring heaters at levels greatly exceeding their power wattage ratings significantly reduces the life of the ring heaters.

In addition, ring heaters are susceptible to the ingress of water. During operation of the ring heater, this water is transformed into steam pressure which can distort the sheath of the ring heater so that the sheath takes on a somewhat curved configuration. This results in a rather substantial loss of contact area with the die, thus reducing heat transfer to the die and placing further strain on the operational rating of the ring heater. That is, when the ring heater distorts, heat is not effectively transferred to the die and so the thermocouple which measures the temperature near the surface of the die determines that the die heating surface is not sufficiently hot. This causes the ring heaters to be run at full wattage and higher temperatures for longer periods of time, and creates further operational problems that significantly reduce the operating life of the ring heaters.

We recently replaced the ring heaters used in the four pressing machines mentioned above with cast-in heaters. With the use of cast-in heaters, only two cast-in heaters are required for each die set; one cast-in heater in one of the dies and one cast-in heater in the other die. Other than replacing the ring heaters with cast-in heaters, these four pressing machines have not been changed. We have also added six additional pressing machines in

the Bowling Green facility for producing nine-inch paper plates. Each of these six additional pressing machines also has five die sets, with each of the die sets being heated by two cast-in heaters. We thus have ten pressing machines currently operating at the Bowling Green facility for manufacturing nine-inch plates, with a total of 100 cast-in heaters being used in the ten machines.

Utilizing cast-in heaters in place of the previously used ring heaters has produced unexpected results. Indeed, with the use of cast-in heaters, we have been able to virtually eliminate heater failures. Between March 1, 2001 and February 28, 2002, the ten pressing machines described above have experienced only 7 cast-in heater failures requiring replacement of the cast-in heater. This represents a substantial decrease from the number of ring heater failures mentioned above -- 7 cast-in heater failures over a one-year period for ten pressing machines operating a total of 100 cast-in heaters versus 345 ring heater failures over a one-year period for four pressing machines operating a total of 60 ring heaters.

This significant reduction in the incidence of heater failures associated with the use of cast-in heaters has also resulted in a substantial decrease in the amount of machine down-time. We have thus seen a rather large increase in productivity and output of the pressing machines as compared to when we were using ring heaters.

It is believed that this virtual elimination of heater failures through use of cast-in heaters may be attributable to several factors. Cast-in heaters do not have to be operated at the same high wattage as ring heaters. Indeed, cast-in heaters can be operated at

significantly lower wattage while still achieving the necessary temperature at the die surface. Additionally, cast-in heaters have substantially lower heater surface temperatures during heat up and production than in the case of ring heaters. Also, cast-in heaters are not nearly as susceptible to the ingress of water and so distortion of the cast-in heater at the die contact surface is not likely to occur. The cast-in heater thus maintains a flatter surface to provide more uniform heating as well as better heat transfer.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

5/16/02
Date

Dana Markwell
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